

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 168-01	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE2003/000986	International filing date (day/month/year) 13.06.2003	Priority date (day/month/year) 03.07.2002
International Patent Classification (IPC) or national classification and IPC F04C 2/10, F16D 1/08, F16H 1/48		
Applicant SCANIA CV AB (publ) et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.	
3. This report is also accompanied by ANNEXES, comprising:	
a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>2</u> sheets, as follows:	<input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
	<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4. This report contains indications relating to the following items:	
<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 22.12.2003	Date of completion of this report 30.09.2004
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Lena Nilsson / MRO Telephone No. +46 8 782 25 00

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 7 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* 9 - 10 received by this Authority on 14.06.2004

pages* _____ received by this Authority on _____

☒ the drawings:

pages 1 - 3 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (*specify*): _____

☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2003/000986

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-7</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-7</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-7</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Cited documents:

D1: US, A, 5439360

D2: PATENT ABSTRACTS OF JAPAN

vol. 1999, no. 04, 30 April 1999 (1999-04-30)

& JP 11013640 A (NISSAN MOTOR CO LTD),

19 January 1999 (1999-01-19) abstract

D3: PATENT ABSTRACTS OF JAPAN

vol. 2000, no. 19, 5 June 2001 (2001-06-05)

& JP 1050357 A (MITSUBISHI HEAVY IND LTD),

23 October 2001 (2001-10-23) abstract

D4: PATENT ABSTRACTS OF JAPAN

vol. 2000, no. 19, 5 June 2001 (2001-06-05)

& JP 1050358 A (MITSUBISHI HEAVY IND LTD),

23 October 2001 (2001-10-23) abstract

None of the cited documents reveals a gear pump for a hydrodynamic brake comprising a rotatable shaft incorporating a portion which extends through a hole in the gearwheel, said portion of the shaft having a recess which incorporates a first surface and the gear wheel portion, which extends radially inwards in the gear wheel's hole and incorporates a second surface, which first surface and second surface are so shaped as to allow transfer of rotary motion from the shaft to the gear wheel. Therefore, the cited documents are considered to represent the general state of the art.

The invention defined in claims 1-7 is not disclosed by any of these documents.

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed gear pump for a hydrodynamic brake. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-7 is novel and is considered to involve an inventive step. The invention is industrially applicable.

Claims

1. A gear pump for a hydrodynamic brake which gear pump incorporates a ring gear (16) supported for rotation and having internal teeth (16a), a gearwheel (17) arranged
5 excentrically within the ring gear (16) and incorporating external teeth (17') intended to engage with the ring gear's internal teeth (16'), and a rotatable shaft (9) incorporating a portion which extends through a hole (18) in the gearwheel, while said portion of the shaft (9) has a recess (21) which incorporates a first surface (21') and the gearwheel a portion (22), which extends radially inwards in the gearwheel's hole (18)
10 and incorporates a second surface (22'), which first surface (21') and second surface (22') are so shaped as to allow transfer of rotary motion from the shaft (9) to the gearwheel (17), characterised in that said transfer between the first surface (21') and the second surface (22') takes place via a region of contact (a) which has axial extent equal to less than half of the gearwheel's axial extent (b) and which is divided by a
15 radial plane (c) which extends centrally through the gearwheel (17).
2. A gear pump according to claim 1, characterised in that said radial plane (c) divides the region of contact (a) into two substantially equal areas.
- 20 3. A gear pump according to any one of the foregoing claims, characterised in that said second surface (22') has a substantially planar extent in an axial direction and that said first surface (21') has a curved extent in an axial direction with a shape such that said region of contact (a) is constituted.
- 25 4. A gear pump according to claim 3, characterised in that that the first surface (21') has a curved extent beyond the region of contact (a) so that the distance between the first surface (21') and the second surface (22') increases in proportion to the distance from the region of contact (a).
- 30 5. A gear pump according to any one of the foregoing claims 1 to 3, characterised in that said first surface (21') has a planar extent in an axial direction and that said second

surface (22') has a curved extent in an axial direction with a shape such that said region of contact (a) is constituted.

- 5 6. A gear pump according to claim 5, characterised in that the second surface (22') has a curved extent beyond the region of contact so that the distance between the first surface (21') and the second surface (22') increases in proportion to the distance from the region of contact.
- 10 7. A gear pump according to any one of the foregoing claims, characterised in that the hydrodynamic brake incorporates a structure with a multiplicity of recesses (14) for accommodating various components (15), each of which recesses (14) has an opening in a substantially common plane (A), and that the gear pump (15') is intended to be arranged in one of said recesses (14').